

Conference Abstract

Connecting the Dots: Aligning human capacity through networks toward a globally interoperable Digital Extended Specimen (DES) infrastructure

Elizabeth R. Ellwood[‡], Wouter Addink^{§,|}, John Bates[¶], Andrew Bentley[#], Jutta Buschbom[¤], Alina Freire-Fierro[«], Jose Fortes[»], David Jennings[‡], Kerstin Lehnert[^], Bertram Ludäscher^ˇ, Keping Ma^{!'}, James Macklin^ˇ, Austin Mast^ˇ, Joe Miller[¢], Gil Nelson[‡], Nicky Nicolson^ℓ, Jyotsna Pandey^⁹, Deborah L Paul^ˇ, Sinlan Poo[¶], Richard Rabeler^{^K}, Pamela S. Soltis[»], Elycia Wallis^², Michael S. Webster^⁹, Andrew Young[‡], Breda M. Zimkus[¶]

[‡] iDigBio, Gainesville, United States of America

[§] Naturalis Biodiversity Center, Leiden, Netherlands

[|] Distributed System of Scientific Collections (DiSSCo), Leiden, Netherlands

[¶] Field Museum, Chicago, United States of America

[#] University of Kansas, Lawrence, United States of America

[¤] Statistical Genetics, Ahrensburg, Germany

[«] Universidad Técnica de Cotopaxi, Latacunga, Ecuador

[»] University of Florida, Gainesville, United States of America

[^] Lamont-Doherty Earth Observatory of Columbia University, Palisades, United States of America

^ˇ University of Illinois Urbana-Champaign, Champaign, United States of America

[!] Chinese Academy of Sciences, Beijing, China

^{!'} Agriculture and Agri-Food Canada, Ottawa, Canada

[¶] Florida State University, Tallahassee, United States of America

[¤] GBIF, Copenhagen, Denmark

^ℓ Royal Botanic Gardens, Kew, London, United Kingdom

^⁹ American Institute of Biological Sciences, Herndon, United States of America

[¶] Memphis Zoo, Memphis, United States of America

^{^K} University of Michigan, Ann Arbor, United States of America

^² CSIRO, Melbourne, Australia

^⁹ Cornell Lab of Ornithology, Ithaca, United States of America

[‡] CSIRO, Canberra, Australia

[¶] Museum of Comparative Zoology, Cambridge, United States of America

Corresponding author: Elizabeth R. Ellwood (ellwoodlibby@gmail.com)

Received: 07 Sep 2023 | Published: 08 Sep 2023

Citation: Ellwood ER, Addink W, Bates J, Bentley A, Buschbom J, Freire-Fierro A, Fortes J, Jennings D, Lehnert K, Ludäscher B, Ma K, Macklin J, Mast A, Miller J, Nelson G, Nicolson N, Pandey J, Paul DL, Poo S, Rabeler R, Soltis PS, Wallis E, Webster MS, Young A, Zimkus BM (2023) Connecting the Dots: Aligning human capacity through networks toward a globally interoperable Digital Extended Specimen (DES) infrastructure. Biodiversity Information Science and Standards 7: e112390. <https://doi.org/10.3897/biss.7.112390>

Abstract

Thanks to substantial support for biodiversity data mobilization in recent decades, billions of occurrence records are openly available, documenting life on Earth and enabling timely research, awareness raising, and policy-making. Initiatives across local to global scales have been separately funded to serve different, yet often overlapping audiences of data users, and have developed a variety of platforms and infrastructures to meet the needs of these audiences. The independent progress of biodiversity data providers has led to innovations as well as challenges for the community at large as we move towards connecting and linking a diversity of information from disparate sources as Digital Extended Specimens (DES).

Recognizing a need for deeper and more frequent opportunities for communication and collaboration across the globe, an ad-hoc group of representatives of various international, national, and regional organizations have been meeting virtually since 2020 to provide a forum for updates, announcements, and shared progress. This group is provisionally named International Partners for the Digital Extended Specimen (IPDES), and is guided by these four concepts: Biodiversity, Connection, Knowledge and Agency. Participants in IPDES include representatives of the Global Biodiversity Information Facility ([GBIF](#)), Integrated Digitized Biocollections ([iDigBio](#)), American Institute of Biological Sciences ([AIBS](#)), Biodiversity Collections Network ([BCoN](#)), Natural Science Collections Alliance ([NSCA](#)), Distributed System of Scientific Collections ([DiSSCo](#)), Atlas of Living Australia ([ALA](#)), Biodiversity Information Standards ([TDWG](#)), Society for the Preservation of Natural History Collections ([SPNHC](#)), National Specimen Information Infrastructure of China ([NSII](#)), and South African National Biodiversity Institute ([SANBI](#)), as well as individuals involved with biodiversity informatics initiatives, natural science collections, museums, herbaria, and universities. Our global partners group strives to increase representation from around the globe as we aim to enable research that contributes to novel discoveries and addresses the societal challenges leading to the biodiversity crisis. Our overarching mission is to expand on the community-driven successes to connect biodiversity data and knowledge through coordination of a globally integrated network of stakeholders to enable an extensible technical and social infrastructure of data, tools, and working practices in support of our vision.

The main work of our group thus far includes publishing a paper on the Digital Extended Specimen (Hardisty et al. 2022), organizing and hosting an array of activities at conferences, and asynchronous online work and forum-based exchanges. We aim to advance discussion on topics of broad interest to our community such as social and technical capacity building, broadening participation, expanding social and data networks, improving data models and building a backbone for the DES, and identifying international funding solutions.

This presentation will highlight some of these activities and detail progress towards a roadmap for the development of the human network and technical infrastructure necessary to support the DES. It provides an opportunity for feedback from and engagement by

stakeholder communities such as TDWG and other initiatives with a focus on data standards and biodiversity informatics, as we solidify our plans for the future in support of integrated and interconnected biodiversity data and credit for those doing the work.

Keywords

biodiversity, collaboration, international partners, roadmap

Presenting author

Nicky Nicolson

Presented at

TDWG 2023

Conflicts of interest

Ely Wallis is a co-author

Disclaimer: This article is (co-)authored by any of the Editors-in-Chief, Managing Editors or their deputies in this journal.

References

- Hardisty AR, Ellwood ER, Nelson G, Zimkus B, Buschbom J, Addink W, Rabeler RK, Bates J, Bentley A, Fortes JAB, Hansen S, Macklin JA, Mast AR, Miller JT, Monfils AK, Paul DL, Wallis E, Webster M (2022) Digital Extended Specimens: Enabling an Extensible Network of Biodiversity Data Records as Integrated Digital Objects on the Internet. *BioScience* 72 (10): 978-987. <https://doi.org/10.1093/biosci/biac060>